

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SYDNEY M. PUGH, TIMOTHY J.N. SMITH,  
MICHAEL SYAER, SARAH  
and DORTHEA LANGSTAFF

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Appeal 2006-2008  
Application 09/029,872  
Technology Center 1700

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Decided: February 26, 2007

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Before EDWARD C. KIMLIN, CHARLES F. WARREN, and  
JEFFREY T. SMITH, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 1, 2, 6, 10, 12, 13, 22, 23, 25-27, 29, 32-35, 37, and 38.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 134.

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<sup>1</sup> According to Appellants, the subject matter of claim 28 has been indicated to be allowable if rewritten in independent form (Brief submitted July 9, 2004, page 2).

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### **BRIEF STATEMENT OF THE INVENTION**

Appellants' invention is directed to a bioactive artificial sintered composition comprising stabilized insoluble tricalcium phosphate (TCP), processes of making the composition, and methods of using the composition. Representative independent claim 1, as presented in the Brief, appears below:

1. A bioactive artificial sintered composition for supporting bone cell activity, said composition comprising:

a powder or bulk material of stabilized insoluble tricalcium phosphate wherein the tricalcium phosphate is stabilized with stabilizing entities uniformly throughout the entire composition, and wherein said uniformly stabilized tricalcium phosphate is resorbable by osteoclasts and promotes secretion of mineralized bone matrix by osteoblasts,

wherein said stabilizing entities are selected from the group consisting of silicon entities, aluminum entities, barium entities, titanium entities, germanium entities, chromium entities, vanadium entities, niobium entities, boron entities and mixtures thereof.

The Examiner relies on the following references in rejecting the appealed subject matter:

Kijima	US 4,983, 182	Jan. 08, 1991
Davies	WO 94/26872	Nov. 24, 1994

Ruys, A. J., "Silicon-Doped Hydroxyapatite", J. Aust. Ceram. Soc. 29 [1/2], pp 71-80, (1993).

The Examiner entered the following final rejections:

I. Claims 1, 2, 6, 12, 13, 22, 23, 25, 32, 34, and 38 are rejected under 35 U.S.C. § 102(b) as anticipated by Ruys.

II. Claims 10 and 26 are rejected under 35 U.S.C. § 103(a) as obvious over Ruys.

III. Claims 27, 29, 35, and 37 are rejected under 35 U.S.C. § 103(a) as obvious over the combined teachings of Ruys and Davies.

IV. Claim 33 is rejected under 35 U.S.C. § 103(a) as obvious over the combined teachings of Ruys and Kijima.

In rendering this opinion we've considered Appellants' arguments presented in the Briefs submitted October 28, 2003 and July 9, 2004. We note Appellants contend that some of the rejected claims do not stand or fall U.S.C. § 102(b) as anticipated by Ruys. We select claim 1 as representative of the rejected claims<sup>2</sup> together (Br. 5-6). We will consider Appellants' separate arguments. However, in the rejections where Appellants have failed to provide separate arguments for individual claims, the claims will stand or fall together.

Claims 1, 2, 6, 12, 13, 22, 23, 25, 32, 34, and 38 are rejected under 35 U.S.C. § 102(b) as anticipated by Ruys.

The Examiner contends that Ruys describes a bioactive sintered composition for supporting bone cell activity. The Examiner asserts that Ruys discloses a uniform mixture of hydroxylapatite and silicone that is converted to alpha-TCP (insoluble) by a sintering process (Answer 4). Appellants contend<sup>3</sup> that Ruys describes the production of conventional TCP that is soluble and biodegradable in physiological fluids and therefore is not the same as the claimed invention (Br 8). For this ground of rejection, the issue before us is whether Ruys discloses a bioactive artificial sintered

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<sup>2</sup> The Examiner contends that the effective filing date of the present claims is August 30, 1996 (Answer 4). The Appellants have not challenged the Examiner's position in the responsive Brief.

<sup>3</sup> Appellants' position for this ground of rejection appears in the Brief submitted October 28, 2003.

composition comprising insoluble tricalcium phosphate stabilized with silicon.

Hydroxylapatite is converted to TCP by a sintering process (Specification 12, ll. 1-19).

The Specification discloses that the conversion temperature for  $\alpha$ -TCP is reduced to about 950° C in the presence of silica powder (Specification 15, ll. 5-10).

The Specification discloses the presence of stabilizing entities in  $\alpha$ -TCP compositions prevent degradation in physiological fluids (Specification 5, ll. 19-30).

Suitable stabilizing entities for the present invention are those which form oxides, preferably metal oxides including silicon oxides (Specification 16, ll. 7-11).

The term stabilized “refers to calcium phosphate phases formed upon conversion of a hydroxyapatite that maintains a consistent crystallographic and chemical structure when placed in ambient conditions or in physiological environments *in vivo* or *in vitro*” (Specification 10, ll. 6-10).

Ruys describes the formation of silicon-doped hydroxyapatite (HAp) employing tetraethylorthosilicate (TEOS) including a sintering process (Page 76).

Ruys discloses the products resulting from the doping of hydroxylapatite with silicon include  $\alpha$ -TCP (Page 79).

The mere recitation of a property or characteristic not disclosed by the prior art does not necessarily confer patentability to a composition or a method of using that composition. *See In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975).

Where the Examiner establishes a reasonable belief that the property or characteristic recited in the claims would have been inherent to the product or process, the burden of proof shifts to Appellants to show that this characteristic or property is not possessed by the prior art. *See In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657-58 (Fed. Cir. 1990).

The Examiner has carried the burden of making out a prima facie case of anticipation in the first instance by pointing out where each and every element of the claimed invention, arranged as required by the claim, is described identically in the reference, either expressly or under the principles of inherency. *See In re Spada*, 911 F.2d at 708, 15 USPQ2d at 1657 (Fed. Cir. 1990).

We agree with the Examiner's description of the embodiments of the Ruys reference that describes the formation of silicon-doped hydroxyapatite (HAp) including a sintering process resulting in products that comprise an  $\alpha$ -TCP. It appears that the Appellants are doing no more than what Ruys discloses. That is, Appellants have doped hydroxyapatite with silicon (stabilizing entity) to produce a product that includes  $\alpha$ -TCP. According to the present record the silicon functions to stabilize the  $\alpha$ -TCP resulting in the characteristics of insolubility in physiological fluids. (See Specification, pages 5 and 14). Appellants have not directed us to evidence that the  $\alpha$ -TCP included in the product described in Ruys does not possess the characteristics of the presently claimed product.

Regarding the rejection of claims 10 and 26 under 35 U.S.C. § 103(a) as obvious over Ruys, we affirm the rejection for the reasons stated by the Examiner and add the following.

It is well settled that the substitution of an equivalent component for another component may be obvious even if the prior art does not expressly suggest the substitution. *Ex parte Novak*, 16 USPQ2d 2041, 2043 (Bd. Pat. App. & Int. 1989), *aff'd. mem.*, 16 USPQ2d 2043 (Fed. Cir. 1990). Based on the disclosure of Ruys, one of ordinary skill in the art would have reasonably expected that homologs of tetraethyl orthosilicates would have been suitable for the conversion of hydroxyapatite to TCP. Appellants have not challenged the Examiner's position that tetrapropyl orthosilicate is a homolog of tetraethyl orthosilicate.

Regarding the rejection of claims 27, 29, 35, and 37 under 35 U.S.C. § 103(a) as obvious over the combined teachings of Ruys and Davies, we affirm the rejection for the reasons stated by the Examiner.

The Examiner contends that Davies teaches it was known to assess bone cell activity by a culturing bone cells coated on a thin film (Answer 6). According to Davies, the film is sintered to form calcium hydroxyapatite and/or TCP (Page 6). Appellants contend that the description of the TCP film of Davies is different from the claimed invention because silicon is not uniformly distributed as claimed (Br 13). Appellants' position is not persuasive. Appellants' argument does not address the rejection as provided by the Examiner. The Examiner is relying on the combined teachings of Ruys and Davies both of which are concerned with bioactivities of calcium phosphate containing compositions.

Regarding the rejection of claim 33 under 35 U.S.C. § 103(a) as obvious over the combined teachings of Ruys and Kijima, we affirm the rejection for the reasons stated by the Examiner. Appellants' statement appearing on page 10 of the brief does not address the rejections as

presented by the Examiner. Specifically, Appellants' argument does not address the suitability of combining the teachings of Kijima and Ruys as proposed by the Examiner. Appellants' argument in the Brief filed July 9, 2004, is not persuasive. As acknowledged by Appellants, Kijima was cited as evidence that it was known to coat implant articles with TCP compositions. A person of ordinary skill in the art would have reasonably expected that the TCP compositions of Ruys could have also been used to coat implant articles. The Appellants have not argued otherwise.

### **ORDER**

The rejection of claims 1, 2, 6, 12 to 13, 22, 23, 25, 32, 34, and 38 under 35 U.S.C. § 102(b) as anticipated by Ruys is affirmed.

The rejection of claims 10 and 26 under 35 U.S.C. § 103 as obvious over Ruys is affirmed.

The rejection of claims 27, 29, 35, and 37 under 35 U.S.C. § 103 as obvious over the combined teachings of Ruys and Davies is affirmed.

The rejection of claim 33 under 35 U.S.C. § 103 as obvious over the combined teachings of Ruys and Kijima is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(iv) (2006).

**AFFIRMED**



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